ASSISTANCE
FOR YOUR SOIL, WATER, AIR PROGRAM

BRANCH OF PHYSICAL RESOURCES

Physical resources—soils, water and air—are an essential part of all BLM programs. We provide field offices with assistance and training in applying the physical sciences to research or on-the-ground projects. This help includes planning, design, implementation, monitoring, and evaluation. The Branch has professional expertise in the following disciplines:

HYDROLOGY – Surface and ground water; water quality
GEOLOGY – Hydrogeology; ground water studies
WATERSHED – Rehabilitation; planning and design
SOILS – Surveys; design, interpretation, application
RESOURCE EVALUATION – Statistical analysis; computer applications

The Branch develops and applies new technologies to evaluate specific resource problems or needs in the Bureau. Our staff strives to keep the field current with state-of-the-art methods and procedures in the physical sciences by publishing research summaries, references, and Technical Notes.

Field offices of the BLM may request assistance from the Branch through the annual work planning process or from priorities established by Washington or State Offices. Check with your District or State office for procedures to contact us.

- HYDROLOGY
- GEOLOGY
- WATERSHED
- SOILS
- RESOURCE EVALUATION

BUREAU OF LAND MANAGEMENT

DENVER SERVICE CENTER

The Bureau of Land Management is responsible for a wide range of resource activities on 342 million acres of public lands and roughly a billion acres of subsurface minerals. We've seen an increase in the demand for scientific studies, project designs and technical evaluations to meet the Bureau's program needs. To do this we must have expertise in some highly specialized fields. That's where the BLM Service Center comes in.

We provide administrative, scientific, and technical support to over 220 BLM field offices. Research, design, and training assistance is available from the Service Center when it is not available at the field level.

U.S. Department of the Interior
Bureau of Land Management

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SURFACE WATER HYDROLOGY

Our staff applies watershed monitoring, analysis, and planning to important forest and rangeland management areas. Technical assistance available from our Branch includes:

- Flood frequency and risk analysis
- Rainfall—runoff modeling
- Flood flow routing
- Soil moisture monitoring
- Instream flow determinations
- Channel geometry methods
- Hydrometeorologic data acquisition
- Mined land hydrology investigations

WATER QUALITY

The Branch assists field offices in identifying what water resource appraisals are required by Federal water quality legislation and state water quality standards. Our staff helps prepare Section 208 plans and toxic waste assessments. We also provide training in the identification and analysis of salinity transport mechanisms and design of salinity control projects. Other assistance includes:

- Quality standards instream
- Instream flow requirements
- Non-point source area identification
- Diffuse and point source salinity studies

SOILS

The soils program in the Bureau serves many disciplines. Projects must be individually designed to meet specific management needs.

Our staff assists soil scientists in the design of soil surveys, special studies and related investigations. We also help interpret and apply the resulting data, and provide training for non-soils personnel in the use of soils information. Examples include:

- Survey area work plans (MOUs)
- Soil interpretive guides
- Erosion characterization and monitoring
- Soils elective course (Phoenix Training Center)
- Remote sensing technology in soil surveys

HYDROGEOLOGIC INVESTIGATIONS

Ground water resource evaluations are required for a wide variety of BLM issues, such as mineral leasing and watershed management. Technical support covers all aspects of ground water resource evaluation, monitoring, exploration, and development on public lands. Examples include:

- Feasibility studies for proposed water well drilling
- Evaluation of mining-related impacts to ground water
- Analysis of ground water contamination
- Ground water modeling
- Basin investigations regarding ground water flow
- Sole-source aquifer determinations
- Analysis of ground water/surface water relationships

HAZARDOUS MATERIALS MANAGEMENT

Impacts to ground water and surface water resources due to chemical spills or disposal of hazardous materials on public lands have become major issues.

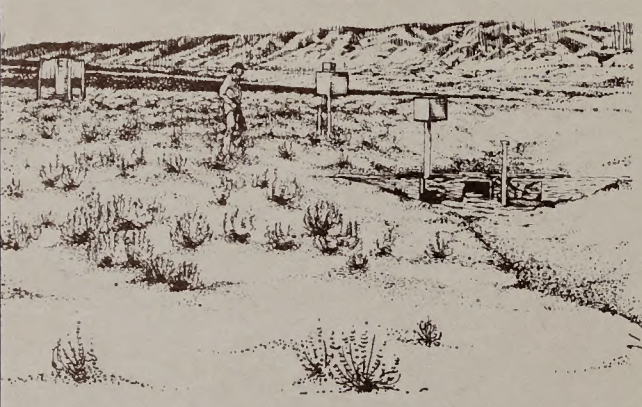
The Branch of Physical Resources provides technical guidance for the implementation of the hazardous materials program, and the solution of surface/ground water contamination problems. The staff investigates methods for abating, controlling, and monitoring ground or surface water contamination on public lands. Examples include:

- Evaluation of ground water impacts from mine spoil piles
- Delineation of aquifer protection zones
- Design of monitoring wells
- Pollution monitoring

WATERSHED REHABILITATION

Watershed rehabilitation includes the stabilization of stream channels, riparian zones, severely eroding uplands, reclaimed surface mines, and other disturbed sites. The Branch of Physical Resources provides technical assistance in analysis, planning, and design for watershed rehabilitation projects. Examples of our work include:

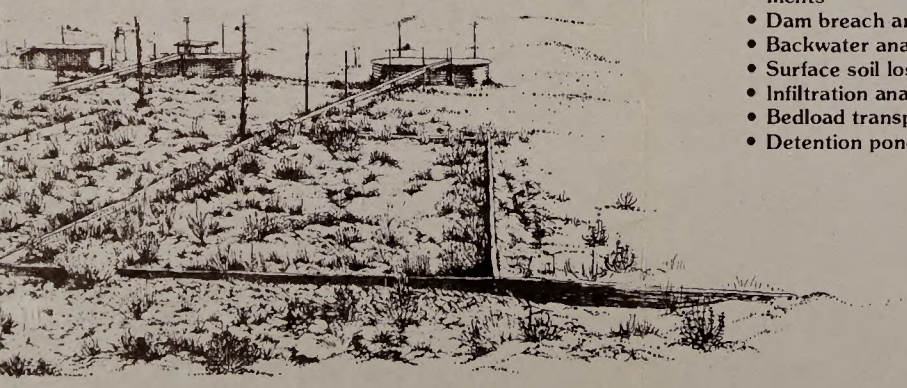
- Reclamation evaluations
- Selection of alternative treatments
- Preliminary project planning
- Monitoring designs



COMPUTER APPLICATIONS AND STATISTICAL ANALYSIS

The Branch provides assistance in statistical design and analysis as well as computer applications for water resources. This includes programing, modeling, and data base management. Applications include:

- Statistical design; sampling and monitoring
- Data analysis; T-test, regression, analysis of variance
- Scientific programing; FORTRAN, BASIC, COBOL
- Modeling assistance; surface and ground water, runoff, salinity, forage production
- Data base applications; REX2 (ASPEN/2) data base creation and use



Available ground water resources models include:

- General acquifer analysis
- Alluvial valley floor analysis
- Impacts of mining
- Dewatering impacts
- Ground water mounding beneath tailing ponds
- Movement of pollutants from river to pumping well
- Analysis of plume movement

Surface water models include:

- Flood routing through channels and impoundments
- Dam breach analysis
- Backwater analysis/floodplain inundation
- Surface soil loss (USLE)
- Infiltration analysis (Green and Ampt)
- Bedload transport (Meyer Peter Mullor)
- Detention pond design

Rainfall Runoff Model (SCS)

- Runoff calculations
- Synthetic hydrographs

Salinity Model (QWSALT)

- Point source discharge
- Evaporation pond design

Channel Geometry Model (MCHANL & CHANL)

- Channel geometry
- Hydraulic parameters
- Rating curves
- Sag tape or rod and level data

Soil Moisture and Productivity Model (ERHYM)

- Forage production
- Simulate soil water balance
- Simulate runoff

Data base applications include:

- Water use inventory
- Ground water inventory
- Oil shale literature
- Springs inventory
- Job Documentation Reports